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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/656,518	09/05/2003	Kattalaicheri Srinivasan Venkataramani	132657	8036

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John S. Beulick
Armstrong Teasdale LLP
Suite 2600
One Metropolitan Square
St. Louis, MO 63102

EXAMINER	
KIM, TAE JUN	

ART UNIT	PAPER NUMBER
3746	

DATE MAILED: 11/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/656,518	VENKATARAMANI ET AL.	
	Examiner	Art Unit	
	Ted Kim	3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-19 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-19 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 09/05/2003.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 4-6, 9-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Coronel (4,333,309). Coronel teaches a method for assembling a turbine engine to facilitate preventing ice accumulation on the turbine engine during engine operation, said method comprising: coupling at least one heat pipe (from 15 to e.g. 75) to the engine such that a first end of the at least one heat pipe is coupled in thermal communication with a heat source e.g. combustor 76; and coupling a second end of the at least one heat pipe in thermal communication with an outer surface of an engine component 15 that is upstream from the heat source; wherein coupling a second end of the at least one heat pipe further comprises coupling the at least one heat pipe second end in thermal communication with at least a portion of an outer surface of an engine stator assembly; wherein coupling a second end of the at least one heat pipe further comprises coupling the at least one heat pipe second end in thermal communication with at least a portion of an outer surface of an engine component 15 or 41 to facilitate preventing ice accretion across the outer surface of the engine component (col. 4, lines 30-39); wherein said at least one heat pipe is coupled in thermal communication to an outer surface of at least one of an inlet guide

vane assembly 41, a splitter, and an outlet guide vane assembly; said at least one heat pipe facilitates reducing at least one of engine stalls and engine flameouts (inherent, due to the deicing).

3. Claims 6, 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Crouch et al (6,027,078). Crouch et al teach an ice protection system for a turbine engine (col. 4, lines 18+), said ice protection system comprising at least one heat pipe (see Fig. 4) coupled in thermal communication between a heat source 60 and an outer surface of at least one engine component 56, said ice protection system facilitates at least one of preventing and mitigating ice accretion across the engine component outer surface; said at least one heat pipe facilitates reducing at least one of engine stalls and engine flameouts (inherent, due to the deicing).

4. Claims 6, 9-12 are rejected under 35 U.S.C. 102(b) as being ancticipated by Martin (2,709,892). Martin teaches an ice protection system for a turbine engine, said ice protection system comprising at least one/plurality of heat pipes 6, 12 coupled in thermal communication between a heat source 1 and an outer surface of at least one engine component 4, said ice protection system facilitates at least one of preventing and mitigating ice accretion across the engine component outer surface (col. 2, lines 52+); wherein said at least one heat pipe is coupled in thermal communication to an outer surface of at least one of an inlet guide vane assembly/stator 4, a splitter, and an outlet guide vane assembly; said at least one heat pipe facilitates reducing at least one of engine stalls and engine flameouts (inherent, due to the deicing).

5. Claims 1, 2; 4-7, 9-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Kroon (2,474,258). Kroon teaches a method for assembling a turbine engine to facilitate preventing ice accumulation on the turbine engine during engine operation, said method comprising: coupling at least one heat pipe 40, 41 to the engine such that a first end of the at least one heat pipe is coupled in thermal communication with a heat source (the bearings are cooled and thus the oil is heated, see col. 4, lines 6+); and coupling a second end of the at least one heat pipe in thermal communication with an outer surface of an engine component 16 that is upstream from the heat source; wherein coupling at least one heat pipe to the engine such that a first end of the at least one heat pipe is coupled in thermal communication with a heat source further comprises coupling the first end of the at least one heat pipe to at least one of an engine frame strut, an oil tank 37, a sump, and a compressor casing; wherein coupling a second end of the at least one heat pipe further comprises coupling the at least one heat pipe second end in thermal communication with at least a portion of an outer surface of an engine stator assembly 16; wherein coupling a second end of the at least one heat pipe further comprises coupling the at least one heat pipe second end in thermal communication with at least a portion of an outer surface of an engine component to facilitate preventing ice accretion across the outer surface of the engine component (col. 4, lines 53+); wherein said at least one heat pipe is coupled in thermal communication to an outer surface of at least one of an inlet guide vane assembly 16, a splitter, and an outlet guide vane assembly; said at least one heat pipe facilitates

reducing at least one of engine stalls and engine flameouts (inherent); there are a pluratliy of heat pipes.

6. Claims 1, 5, 6, 12, are rejected under 35 U.S.C. 102(b) as being anticipated by Laing (3,978,660). Laing teaches a method for assembling a turbine engine to facilitate preventing ice accumulation on the turbine engine during engine operation, said method comprising: coupling at least one heat pipe 18' to the engine such that a first end of the at least one heat pipe is coupled in thermal communication with a heat source 12; and coupling a second end of the at least one heat pipe in thermal communication with an outer surface of an engine component 13 that is upstream from the heat source; wherein coupling a second end of the at least one heat pipe further comprises coupling the at least one heat pipe second end in thermal communication with at least a portion of an outer surface of an engine component to facilitate preventing ice accretion across the outer surface of the engine component (inherent, as 13 is heated), and; said at least one heat pipe inherently facilitates reducing at least one of engine stalls and engine flameouts.

7. Claims 1, 4-6, 9-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Pravda (6,321,908). Pravda teaches a method for assembling a turbine engine to facilitate preventing ice accumulation on the turbine engine during engine operation, said method comprising: coupling at least one heat pipe 91, 92 (Fig. 6) to the engine such that a first end of the at least one heat pipe is coupled in thermal communication with a heat source 81, 82; and coupling a second end of the at least one heat pipe in thermal communication with an outer surface of an engine component 85, 86 that is upstream from the heat

source; wherein coupling a second end of the at least one heat pipe further comprises indirectly coupling the at least one heat pipe second end 85, 86 in thermal communication (e.g. radiative) with at least a portion of an outer surface of an engine stator assembly (shown in dashed cross section between the blades/rotors); wherein coupling a second end of the at least one heat pipe further comprises coupling the at least one heat pipe second end in thermal communication with at least a portion of an outer surface of an engine component to facilitate preventing ice accretion across the outer surface of the engine component (inherent, due to the heating); wherein said at least one heat pipe is coupled in thermal communication (e.g. radiatively) to an outer surface of at least one of an inlet guide vane assembly and an outlet guide vane assembly; said at least one heat pipe inherently facilitates reducing at least one of engine stalls and engine flameouts.

8. Claims 1, 5, 6, 11, 12, are rejected under 35 U.S.C. 102(b) as being anticipated by Matsunaga (6,510,684). Matsunaga teaches a method for assembling a turbine engine to facilitate preventing ice accumulation on the turbine engine during engine operation, said method comprising: coupling at least one heat pipe 33 to the engine such that a first end of the at least one heat pipe is coupled in thermal communication with a heat source (near turbine at 33a); and coupling a second end of the at least one heat pipe in thermal communication with an outer surface of an engine component that is fluidly upstream from the heat source (33b); wherein coupling a second end of the at least one heat pipe further comprises coupling the at least one heat pipe second end in thermal

communication with at least a portion of an outer surface of an engine component to facilitate preventing ice accretion across the outer surface of the engine component.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 3, 8, 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over any of the above prior art (e.g. Kroon) in view of Moskowitz et al (3,756,020). The prior art teach various aspects of the invention but do not teach a first end of the at least one heat pipe is coupled in thermal communication with a heat source further comprises coupling the first end of the at least one heat pipe to at least one of an environmental bleed air manifold and a compressor discharge bleed air manifold. Moskowitz et al teach a first end of the at least one heat pipe is coupled in thermal communication with a heat source further comprises coupling the first end of the at least one heat pipe 52, 53 to a compressor discharge bleed air manifold 67 (see abstract). It would have been obvious to one of ordinary skill in the art to employ the compressor discharge bleed air manifold as the heat source, as a well known heat source used for heat pipes in gas turbine engines.

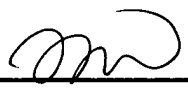
Contact Information

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Ted Kim whose telephone number is 703-308-2631 until approximately November 22 at which point the telephone number will be 571-272-4829. The Examiner can be reached on regular business hours before 5:00 pm, Monday to Thursday and every other Friday.

The fax numbers for the organization where this application is assigned are 703-872-9306 for Regular faxes and 703-872-9306 for After Final faxes.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler, can be reached on 703-306-2772.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist of Technology Center 3700, whose telephone number is 703-308-0861. General inquiries can also be directed to the Patents Assistance Center whose telephone number is 800-786-9199. Furthermore, a variety of online resources are available at http://www.uspto.gov/main/patents.htm



Ted Kim	Telephone	703-308-2631
Primary Examiner	(eff. 11/22/2004)	571-272-4829
	Fax (Regular)	703-872-9306
November 4, 2004	Fax (After Final)	703-872-9306
Technology Center 3700 Receptionist	Telephone	703-308-0861
Patents Assistance Center	Telephone	800-786-9199